CLAIMS

1. A method for depositing and forming a film coming from an aqueous film-forming polymer dispersion on a surface based on a mineral binder composition while it is still wet, characterized in that a sufficient quantity of at least one water-soluble amphiphilic copolymer is added to said aqueous film-forming polymer dispersion, the water-soluble amphiphilic copolymer being selected from:

(i) at least one polymer obtained by the polymerization

. of at least one ethylenically unsaturated monomer (I) of monocarboxylic or polycarboxylic acid type, or else a precursor of carboxylic acids of anhydride type, whether aliphatic, cyclic, linear or branched, and

. of at least one linear or branched, monoethylenically unsaturated hydrocarbon monomer (II), this hydrocarbon monomer not being aromatic;

(ii) at least one polymer coming from the polymerization of at least one monocarboxylic or polycarboxylic acid monomer (I), or anhydride, whether aliphatic, cyclic, linear or branched, which is ethylenically unsaturated and includes at least one hydrophobic, saturated or unsaturated, C_4-C_{30} hydrocarbon grafted species, optionally interrupted by one or more heteroatoms, this hydrophobic grafted species not being aromatic; and

(iii) at least one polymer obtained by chemical modification such as for example by esterification, transesterification or amidification of a precursor polymer comprising, on the one hand, sites on which a hydrophobic species can be grafted, such as for example carboxylic acid or ester sites, this hydrophobic grafted species not being aromatic and comprising, moreover, carboxylic acid units or carboxylic acid precursors.

2. The method as claimed in claim 1, characterized in that the mineral binders are selected from hydraulic binders and air-setting binders.

3. The method as claimed in claim 2, characterized in that the hydraulic mineral binders are selected from cements, which may be of the Portland, aluminous or blast-furnace slag type.

4. The method as claimed in claim 2, characterized in that the air-setting mineral binders are selected from plasters.

5. The method as claimed in claim 2, characterized in that the mineral binders are selected from fly ash, calcined schists and natural or synthetic pozzolana.

6. The method as claimed in claim 3, characterized in that the hydraulic mineral binders are in the form of slurries or concretes.

7. The method as claimed in any one of claims 1 to 6, characterized in that the mineral binders are in the form of moldings or prefabricated components for the construction industry, civil engineering or public works.

8. The method as claimed in claim 7, characterized in that the moldings or prefabricated components are selected from cement tiles, the cement possibly being fiber-reinforced, cladding panels, fiber cement panels or molded components made of fiber cement, or plasterboards.

9. The method as claimed in any one of the preceding claims, characterized in that the aqueous film-forming polymer dispersion (latex) comprises at least one

water-insoluble polymer obtained by the polymerization of monomers selected from:

- vinyl esters and more particularly vinyl acetate;
- alkyl acrylates and methacrylates, the alkyl group of which contains 1 to 10 carbon atoms, for example methyl, ethyl, n-butyl and 2-ethylhexyl acrylates and methacrylates; and
- vinylaromatic monomers, particularly styrene;

these monomers being able to be copolymerized with themselves or with other ethylenically unsaturated monomers that can be copolymerized with vinyl acetate and/or acrylic esters and/or styrene, in order to form homopolymers, copolymers or terpolymers.

10. The method as claimed in claim 9, characterized in that the monomers that can be copolymerized with vinyl acetate and/or acrylic esters and/or styrene may be selected from ethylene and olefins such as isobutene; vinyl esters of branched or unbranched, saturated monocarboxylic acids having from 1 to 12 carbon atoms, such as vinyl propionate, vinyl "Versatate" (registered trademark for esters of C_9-C_{11} branched acids), vinyl pivalate and vinyl laurate; esters of monocarboxylic or dicarboxylic unsaturated acids having 3 to 6 carbon atoms with alkanols having 1 to 10 carbon atoms, such as methyl, ethyl, butyl and ethylhexyl maleates and fumarates; vinylaromatic monomers, such as methylstyrenes and vinyltoluenes; vinyl halides, such as vinyl chloride and vinylidene chloride, diolefins, particularly butadiene; (meth)allylic esters of (meth)acrylic acid, (meth)allylic esters of monoesters and diesters of maleic, fumaric and itaconic acids, and alkene derivatives of amides of acrylic and methacrylic acids, such as N-methallylmaleimide.

11. The method as claimed in either of claims 9 and 10, characterized in that the aqueous film-forming polymer dispersion (latex) comprises at least one

water-insoluble polymer obtained by the polymerization of monomers selected from alkyl acrylates and methacrylates, the alkyl group of which contains 1 to 10 carbon atoms, for example methyl, ethyl, n-butyl and 2-ethylhexyl acrylates and methacrylates.

12. The method as claimed in any one of claims 1 to 11, characterized in that, in variant (i):

- the monomer (I) has the following formula:

$(R^1)(R^1)C = C(R'^1)-COOH$ (I)

in which formula:

- the radicals R^1, R'^1, which are the same or different, represent a hydrogen atom, a C_1-C_{10} hydrocarbon radical optionally containing a -COOH group, a -COOH group; and
- the monomer of formula (II) has the following formula:

$(R^2)(R^3)C = C(R^5)(R^6)$ (II)

in which formula:

- the radical R^2 represents a hydrogen atom, a C_1-C_{10}, linear or branched, alkyl radical optionally substituted with heteroatoms;
- the radical R^3 represents a C_1-C_{10}, linear or branched, alkyl radical optionally substituted with heteroatoms, or an $-OR^4$ radical, that is to say a vinyl ether, where R^4 represents a C_1-C_{10}, linear or branched, alkyl radical optionally substituted with heteroatoms;
- the radical R^5 represents a hydrogen atom or a C_1-C_{10}, linear or branched, alkyl radical optionally substituted with heteroatoms; and
- the radical R^6 represents a hydrogen atom or a C_1-C_{10}, linear or branched, alkyl radical optionally substituted with heteroatoms,

it being understood that at least one of the radicals R^2, R^3, R^5 or R^6 represents a C_1-C_{10}, linear or branched, alkyl radical optionally substituted with heteroatoms.

13. The method as claimed in claim 12, characterized in that the monomer of formula (I) is such that:

- one of the radicals R^1 is a hydrogen atom;
- the other radical R^1 represents a hydrogen atom, a -COOH group or a $-(CH_2)_nCOOH$ group in which n is between 1 and 4, or a C_1-C_4 alkyl radical; and
- R'^1 represents a hydrogen atom, a $-(CH_2)_mCOOH$ group in which m is between 1 and 4, or a C_1-C_4 alkyl radical.

14. The method as claimed in claim 13, characterized in that the monomer of formula (I) is such that:

- one of the radicals R^1 represents a hydrogen atom;
- the other radical R^1 represents a hydrogen atom, a -COOH or $(CH_2)COOH$ group or a methyl radical; and
- R'^1 represents a hydrogen atom, a $-CH_2COOH$ group or a methyl radical.

15. The method as claimed in claim 14, characterized in that the monomer of formula (I) is selected from acrylic, methacrylic, citraconic, maleic, fumaric, itaconic and crotonic acids or anhydrides.

16. The method as claimed in claim 15, characterized in that the monomer of formula (I) is maleic anhydride.

17. The method as claimed in claim 12, characterized in that the monomer of formula (II) is selected from ethylene, propylene, 1-butene, isobutylene, n-1-pentene, 2-methyl-1-butene, n-1-hexene, 2-methyl-1-pentene, 4-methyl-1-pentene, 2-ethyl-1-butene, diisobutylene (or 2,4,4-trimethyl-1-pentene), 2-methyl-3,3-dimethyl-1-pentene, isobutyl vinyl ether, methyl vinyl ether, 1-menthyl vinyl ether, phenyl vinyl ether and octadecyl vinyl ether.

18. The method as claimed in any one of claims 11 to 17, characterized in that the copolymer of formula (i)

results from the polymerization of maleic anhydride and isobutylene.

19. The method as claimed in any one of the preceding claims, characterized in that the sufficient amount of water-soluble amphiphilic copolymer added to the aqueous film-forming polymer dispersion (latex) is between 0.3 and 5% by weight of dry water-soluble amphiphilic copolymer relative to the weight of dry latex.

20. The method as claimed in claim 19, characterized in that the sufficient amount of water-soluble amphiphilic copolymer added to the aqueous film-forming polymer dispersion (latex) is between 0.5 and 3% by weight of dry water-soluble amphiphilic copolymer relative to the weight of dry latex.

21. The method as claimed in either of claims 19 and 20, characterized in that the sufficient amount of water-soluble amphiphilic copolymer added to the aqueous film-forming polymer dispersion (latex) is between 0.5 and 1.5% by weight of dry water-soluble amphiphilic copolymer relative to the weight of dry latex.

22. A mineral binder composition, the surface of which is at least partly covered with a film resulting from the drying of a composition comprising an aqueous film-forming polymer emulsion and at least one water-soluble amphiphilic copolymer, said water-soluble amphiphilic copolymer being selected from:

(i) at least one polymer obtained by the polymerization

. of at least one ethylenically unsaturated monomer (I) of monocarboxylic or polycarboxylic acid type, or else a precursor of carboxylic acids of anhydride type, whether aliphatic, cyclic, linear or branched, and

. of at least one linear or branched, monoethylenically unsaturated hydrocarbon monomer (II), this hydrocarbon monomer not being aromatic;

(ii) at least one polymer resulting from the polymerization of at least one monocarboxylic or polycarboxylic acid monomer (I), or anhydride, whether aliphatic, cyclic or aromatic, linear or branched, which is ethylenically unsaturated and includes at least one hydrophobic, saturated or unsaturated, C_4-C_{30} hydrocarbon grafted species, optionally interrupted by one or more heteroatoms, this hydrophobic grafted species not being aromatic; and

(iii) at least one polymer obtained by chemical modification such as for example by esterification, transesterification or amidification of a precursor polymer comprising sites on which a hydrophobic species can be grafted, such as for example carboxylic acid or ester sites, this hydrophobic grafted species not being aromatic.

23. The mineral binder composition as claimed in claim 22, characterized in that the mineral binders are in the form of moldings or prefabricated components.

24. The mineral binder composition as claimed in claim 23, characterized in that the mineral binders are cement tiles, the cement possibly being fiber-reinforced, cladding panels, fiber cement panels, molded components made of fiber cement, or plasterboards.